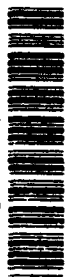
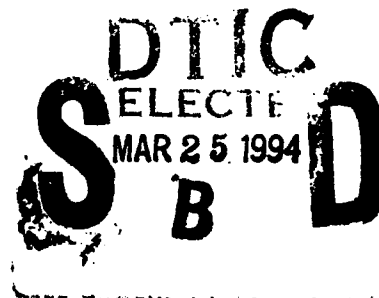


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NAVAL POSTGRADUATE SCHOOL  
Monterey, California



THESIS

THE APPLICATION OF INCENTIVES  
AND THE  
DEFENSE BUSINESS OPERATIONS FUND

by

Michael H. Wallner

December 1993

Thesis Advisor:

William R. Gates

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THE APPLICATION OF INCENTIVES  
AND THE  
DEFENSE BUSINESS OPERATIONS FUND

by

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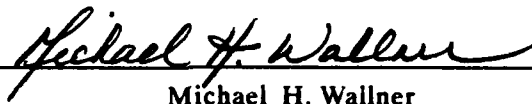
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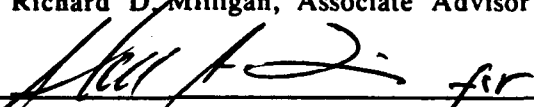
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## ABSTRACT

The Defense Business Operations Fund (DBOF) is an attempt to incorporate private sector business incentives into the public sector. Truly efficient incentive initiatives must provide the motivation and necessary resources for organizations to make cost reducing investments. If either the motivation or resources are missing an organization will not become more cost effective and efficient. The private sector goal is profit maximization. This goal is projected to the firm's production and service divisions through chargeback methods. DBOF is a variant of cost based chargeback. This thesis examines the application of this incentive with special emphasis on Navy contracting activities. It found that some motivation for making investments in efficiency and effectiveness is provided through gainsharing and competition. However, only nominal resources are provided for investment. DBOF could be enhanced by allowing for profit retention and mitigating price sensitivity. This requires the ability to carry unexpended funding forward to the next fiscal year and implementing success sharing or a similar initiative. Success sharing, an innovative suggestion by Dr. Francois Melese, allows the activity to share in some of the cost savings by reducing price (unit cost) slightly less than the cost savings. The Government captures most of the profits, but it provides the activity with some profit to reinvest in more cost reducing investments.

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## **I. INTRODUCTION**

### **A. BACKGROUND**

The demise of the Russian military threat has lead to a reevaluation of the need for the tremendous military power America is presently supporting. Public pressure to reduce spending and cut away at the Federal deficit has increased Congress's desire to cut the huge military budget and reduce the burden on taxpayers. Several initiatives have been undertaken to redefine the role of the American military and develop a cost effective, leaner military.

The Defense Business Operations Fund (DBOF) and its subset, Unit Cost Resourcing, is one such initiative. DBOF is an attempt to bring private sector cost effectiveness to Department of Defense (DoD) support activities. Unit Cost Resourcing challenges service activity managers by increasing the visibility of costs involved in providing a service and establishing unit cost performance goals for the organization to work towards. Conceptually, this provides users of service activities with the total cost picture of a service/supply, allowing the user to make more informed decisions and reduce costs. Additionally, a service organization's ability to meet unit cost goals may become a consideration in evaluating their efficiency and productivity.



DBOF works on a rolling break even concept, where profits are returned to the customer and losses made up in the following year prices. Customers are charged a stabilized rate for a service which approximates the unit cost adjusted for the previous year profits or losses. (These concepts are discussed in detail in Chapter II.)

The civil sector is rewarded and motivated by increased profits when costs are reduced to optimal levels and penalized by losses when costs are not recouped. These profits/incentives serve many purposes including discretionary funds for improvements in facilities, technology, training and production equipment which further reduces costs and increases efficiency.

DoD activities are not provided profits per se. In the early stages of implementing unit costing, "fat" will be easily identified and cut away. In the short run, this will generate profits DoD managers can utilize. However, as costs approach the "ultimate or best" cost, managers will be required to make significant investments in facilities, people, training and technology to make long term cost reductions.

The unit cost can and should provide funds to finance capital improvements costing less than \$25,000.00, or operating expenses such as training. Yet, any expenses made to enhance long term performance, which were not in the budget, will increase unit costs and may cause an adverse

evaluation for even the most prudent managers and their subordinates. Advance planning will become crucial. However if correctly done, planning should allow for the proper budgeting to cover most efficiency investments.

Profit is a major consideration in any private sector operation, yet DBOF makes no real time allowances for profit/incentive or the important functions it serves. Specifically, DBOF does not allow managers to immediately reinvest profits to improve facilities, technology or people through training. While the DBOF concept displays many desirable features, the incentives of the program may send the wrong signal to all levels of the organization.

Unit costing doesn't provide adequate incentives for managers to undertake cost reducing capital investments. Managers invest in capital equipment to increase their profits....Again, further analysis is needed to determine if unit costing improves investment incentives relative to current practices. (Gates93, p. 24)

## **B. OBJECTIVE**

The Defense Business Operations Fund's (DBOF) mechanisms for motivating managers to take risks to reduce costs may not adequately support this important aspect of DBOF philosophy. The purpose of this thesis is to research the application of incentives and, if appropriate, investigate incentive programs which could be used in DBOF applications.

### **C. RESEARCH QUESTIONS**

The primary research question of this thesis is: Under the Defense Budget Operations Fund (DBOF) concept and unit costing for contracting services, will the managers of contracting activities be motivated and have the needed resources to accept increased short term costs to improve either the effectiveness or efficiency of the contracting services they provide in the long term? This question will be answered by addressing the following subsidiary research questions:

1. What are the essential factors of Defense Business Operations Fund?
2. What is the process for establishing a costing structure under Unit Cost Resourcing?
3. What incentives and capabilities are structured into a DBOF/Unit Cost Resourcing contracting environment?
4. What are the benefits and disadvantages of chargeback methods and how well do they produce incentives and resources?
5. How could the incentive structure be improved and incorporated into DBOF and the Unit Cost Resourcing concept?

### **D. SCOPE**

While DBOF may become applicable to all DoD service activities, this thesis will specifically look at contracting service activities such as Navy Regional Contracting Centers (NRCC) and Fleet and Industrial Supply Centers (FISC) and serve as a policy analysis. The Navy expects to implement DBOF for contracting services in Fiscal Year 1995.

## **E. METHODOLOGY**

Research was conducted in several manners. Extreme long distances made direct observation impossible in most instances. Therefore, the main thrust of research was telephone interviews. Interviews were supported by questionnaires which were developed and forwarded to the commanding officers of NRCCs and FISCs. The questionnaires assessed the desirability of profit/losses, potential investments to improve efficiency and reduce costs and feelings toward an appropriate method of calculating and capturing profit.

## **F. CHAPTER OUTLINE**

Information and analysis is presented in the following sequence:

### Chapter

1. Introduction
2. The Defense Business Operations Fund and Unit Cost Resourcing
3. Efficiency and DBOF
4. Data Presentation and Data Analysis
5. Incentive Analysis
6. Conclusions and Recommendations.

## **II. THE DEFENSE BUSINESS OPERATIONS FUND**

### **A. INTRODUCTION**

This chapter discusses Defense Management Review Decision Number 971 which created the Defense Business Operations Fund (DBOF) and provides the framework under which "Unit Costing" functions. First the history and purpose of DBOF is reviewed. This will provide the foundation for the next two sections which discuss the most essential factors of DBOF, Unit Costing and stabilized rates. Finally, a summary of the highlights of DBOF, the Naval Supply Systems Command's tentative proposal to incorporate contracting services into DBOF and the weaknesses of the DBOF-Unit costing concept will close out this chapter.

### **B. DMRD 971 AND THE DEFENSE BUSINESS OPERATIONS FUND (DBOF)**

The National Security Act of 1947 which was amended in 1949 allowed for revolving funds in the Department of Defense (DoD).<sup>1</sup> In Fiscal Year (FY) 1991, the two major DoD revolving funds were Industrial Funds and Stock Funds. Industrial Funds supported activities such as shipyards, printing plants, repair and overhaul facilities, airlift and sealift

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<sup>1</sup>A revolving fund is a non-expiring, self renewing appropriation that provides a financial corpus to finance support activities' operations. Consumer purchases from a revolving fund activity reimburse the fund making more capital available for new output. (Seiden91, p. 33)

transportation and real property maintenance services. Stock Funds supported the availability of such things as electronic supplies, construction supplies and aircraft and ship parts.

As a result of a declining defense budget and need for greater efficiency, Defense Management Report Decision (DMRD) Number 971 initiated the Defense Business Operations Fund (DBOF). DBOF is a large revolving fund, under the control of the Office of the Secretary of Defense, which incorporated the Industrial Funds, Stock Funds and other revolving funds of all military services. According to DMRD Number 971, the basic issue of this incorporation is: "can the DoD financial management system provide better information for decision makers and better tools for managers?" (DMRD 971, p. 1)

This DMRD has significantly changed business and accounting procedures for supporting activities. The Navy related business areas absorbed into the fund in FY 1992 were:

- Supply Management
- Distribution Depots
- Depot Maintenance
- Base Support
- Transportation
- Research and Development Activities
- Printing and Publication Services
- Information Services
- Defense Commissary Agency
- Defense Clothing

- Defense Finance and Accounting Services
- Defense Reutilization and Marketing Service.<sup>2</sup>

New activities, including contracting services, have been excluded from the Fund. The plan is to incorporate those activities at a later time. Government support for DBOF has been questionable. Speculation is that this delay may be a result of the Clinton administration and/or Congress's questionable desire to continue.

There are several valid reasons for implementing DBOF including: collecting cost data, gathering output information and implementing Unit Cost Resourcing (UCR). The Defense Business Operations Fund Implementation Plan states:

The primary goal of implementing the Fund is to provide a business management structure that encourages managers and employees of DoD support organizations to provide quality products or services at the lowest cost. A major feature of this business management structure is increased emphasis on business operations. This business operations structure identifies each business area, the products or services, and the total cost of operations within that business area.

Under this structure, customers establish requirements and are charged, through the rate structure, for the cost of

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<sup>2</sup>This list is not all inclusive. A team was assigned early in the implementation of DBOF to investigate and recommend other services which could be absorbed into DBOF. DMRD 971 states the long range goal is to move all support establishments into DBOF. However, they must meet three requirements: "1)have identified outputs of the business; 2)have a cost accounting system that relates to those outputs; and 3)can identify the customers of the business." (DMRD 971, p. 2)

<sup>3</sup>The products or services, and the total cost of operations form the foundation for "unit costing." The rate structure is a value established by the OSD called the "stabilized rate." Both are very important and will be discussed in great detail in the

industrial and commercial-type services and products provided. Providers, in turn, produce quality goods and services which satisfy customer requirements at the lowest cost....

By making the producing organization responsible for managing all costs associated with delivering the goods or services, those managers will identify cost drivers and can focus their management improvement efforts accordingly. Better cost visibility enables managers at all levels to make informed decisions....

The Fund expands the availability of business management information and provides a structure that supports the customer-provider relationship. The focus is on quality customer service at reduced costs. (DBOF93, p. 2)

DBOF may establish a competitive environment to reduce costs between organizations providing the same or similar services. Customers would then have the incentive to "shop" for the best value and perhaps award long term service arrangements (Inter and Intra-service Support Agreements) between DoD customers and providers. Much like the private market environment, customers could negotiate favorable rates or better service arrangements and the provider would receive a guaranteed customer base to enhance his rate structure or absorb fixed overhead expenses.

Some services provided under DBOF are sole source, such as Defense Finance and Accounting Service (DFAS), and have no competition. In these instances, the Defense Management Review Decision 971 states; "The lack of competition will be overcome by an environment that puts a premium on quality and encourages managers to reduce their costs." (Atwood92, p. 7)

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next chapter.



### **C. UNIT COST RESOURCING**

"Unit costing" requires users to reimburse providers for certain services and support activities. Unit costing, an initiative of Donald Shycoff, the then Principal Deputy DoD Comptroller, is an attempt to improve efficiency of Government operations during times of significant downsizing and budget cut backs. In the civilian arena, this is the normal way of doing business. However, this practice has only been used in limited military applications prior to 1991. Some applications include Naval shipyards and public works activities. Traditionally, activities performed a function or mission and received an annual budget to carry out this mission. The terms "mission funded" or "mission budgeted" are commonly used to describe this budget technique. This was considered very ineffective and encouraged managers to conserve funding until the end of the fiscal year and then "use it or lose it." One study by Sherwood (1977) indicated a one hundred and twenty percent increase in spending the last month of the fiscal year. (Seiden91, p. 18)

Under DBOF, support activities, sometimes called providers, will not receive annual "mission funding." Instead, this funding will be allocated to operating activities (frequently called customers). Customers will then seek the services they require and pay a fee for the service (the stabilized rate). This change may allow customers to shop for services from public or private sources and in

certain areas, such as Public Works and shipyards, even use competitive procedures to ensure they receive the best service and product value at the most reasonable rate.

This "competition" between public and private activities has two apparent advantages; 1) providers must actively search for ways to keep costs down and 2) customers may save funding by procuring services from the least expensive provider. Funds saved through the efficient and resourceful utilization of fees paid would be available for operational fleet activities. Therefore, the provider should not try to make a profit but to reduce cost and budget to the "break-even point" while providing quality "Service to the Fleet."

#### **1. Budgeting Under Unit Costing**

Unit costing is simply the activity's total cost divided by the activity's total output. Total cost is all direct, indirect and general and administrative costs incurred by the organization.<sup>4</sup> Total output is all the identified outputs, including "primary" or "other" outputs. Once the unit costs are established, they are forwarded to the Office of the Secretary of Defense for approval.

The Office of Secretary of Defense (OSD) establishes unit cost goals for the activities in DBOF. These goals are the unit cost adjusted "for inflation, new elements of cost

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<sup>4</sup>Total cost includes the cost of depreciation and military personnel filling billets at the activity. These costs under mission funding where not charged to the activity.

not previously considered and expected productivity improvements." (Hough93, p. 15) Once incorporated into DBOF, at the beginning of each fiscal year, OSD provides each activity an obligational target which is the predetermined unit cost goal times expected production (output or demand) for the year. Should output fall below the expected production level, then the provider's authority to incur costs similarly decreases. At the conclusion of the fiscal year, the actual production times unit cost goal is computed to determine the providers "earned cost authority." (DBOF93, p. 14) The amount the activity obligated minus their earned cost authority equals the activities' total profits or losses.

It is important to note that the obligational target covers all expenses except "capital budget" expenses. Capital budget expenses are any equipment, software, minor construction, and other management improvements costing \$25,000.00 or more. These costs must be amortized and depreciated over a predetermined period. The \$25,000.00 limit is based on congressional actions on expense/investment criteria.<sup>5</sup> (DBOF93, p. 19)

The anticipated benefits of unit cost are summarized as:

Improved operations are expected to come about as a result of producers more carefully managing their operations to minimize costs. Consumers, who will pay higher prices for

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<sup>5</sup>This limit was raised from \$15,000.00 to \$25,000.00 in the Fiscal Year 1994 Authorization Act.

fully costed goods will economize, buying only essentials or seeking alternate sources offering services at lower price.

Personnel performance evaluations will be more meaningful because of standardized cost methods and comparability among similar organizations of the different services.

Budget evaluation, support and planning will become simpler and more consistent. Similar performance measures will apply to diverse organizations.

Decision makers in consuming and producing activities will know the full cost of resources they consume and can make intelligent decisions that integrate cost as an important consideration. OSD managers can more easily assess impacts of important decisions and unit cost information will provide additional data on which to base decisions such as base closures and realignment. (Seiden91, p. 30)

#### **D. STABILIZED RATE**

The Office of the Secretary of Defense (OSD) performs the vital functions of controlling the Defense Business Operations Fund, approving unit cost rates and establishing the "stabilized rate." The stabilized rate is the rate which customers must pay for services acquired from Defense Business Operations Fund activities. This brings the full cost of providing a service in view of the customer and provides an incentive to procure services only when needed and at the best rate possible.

The stabilized rate is a compilation of a charge for services plus or minus a surcharge to bring the DBOF back to a break-even status. For example, if the Fund has collected profits and is over its desired level, OSD will reduce the stabilized rate so that customers enjoy the return of the

profits. Similarly, if the Fund is under the desired level then the stabilized rate is increased to make up the losses through increased customers payments.

Stabilized rates are set for the year so that customers can anticipate and budget the funds required to procure the services they need.

#### **E. SUMMARY OF DBOF, UNIT COSTING AND STABILIZED RATE**

By now it should be apparent that the DBOF is a large pool of funds used to finance all the service activities incorporated in DBOF. Providers withdraw funding based on the number of units of production they have completed times the approved unit costs. Customers reimburse the Fund by paying the stabilized rate for the service provided by the providers. This research indicates DBOF presents a financial cycle such as depicted in Figure 1-1.

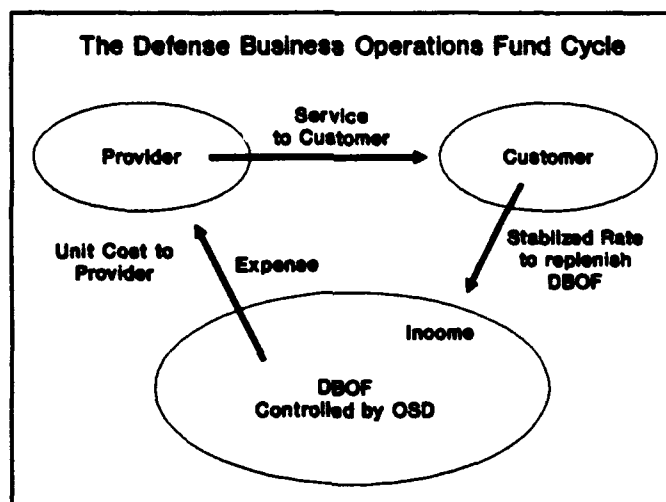


Figure 1-1

Unit cost provides a tremendous incentive for providers to reduce costs. High unit cost activities have traditionally been the first activities examined when closures and realignments are being considered, while low unit cost activities are seen as efficient and effective. This seems common-sense, but a complete study of costs and output is required to accurately determine which activity is providing their service in the most effective and efficient manner. Hunter and Hicks in Unit Costing at the Naval Postgraduate School, June 1991 provide a thorough economic analysis of consolidation based on unit cost and is recommended for further reading.

Additionally, unit cost can easily be used for personnel performance evaluations. This provides a very personal impetus for commanding officers and subordinates to be competitive and meet unit costs goals. Success could mean promotions and job security.

The stabilized rate is important to the DBOF customers. This is the fee customers pay to reimburse DBOF for the services they require. This fee is also used in the budgeting process to compute the amount of mission funding customers will receive at the beginning of each fiscal year. For example, if CINCPACFLT expects to overhaul seven ships during a fiscal year, they will receive funding at a stabilized rate for seven overhauls as part of their annual budget.

## **F. INCORPORATION OF NAVAL CONTRACTING SERVICES**

Navy Regional Contracting Centers and Fleet and Industrial Supply Center contracting services are tentatively scheduled to be implemented into DBOF in FY 1995. These activities provide a myriad of contracting services including:

- Large contracts, competitively negotiated, sealed bid and other than full and open competition.
- Delivery orders.
- Small purchases.<sup>6</sup>
- Contract modifications and changes.

The primary outputs are considered small purchases and large contracts. An approximation of the unit cost for these outputs can be calculated from the Level of Difficulty Report provided as Appendix A. A flat fee structure was selected for small purchases. During FY 92 Naval Supply Systems Command (NAVSUP) completed 1,192,836 small purchase actions at a total cost \$23,029,000 for a unit cost of \$19.31.

The tremendous variations in large contracts makes establishing one pricing mechanism impossible. For example, a \$26,000.00 sealed bid contract is much easier and less time consuming to award than a \$26,000.00 competitive, negotiated contract. These differing levels of difficulty made output

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<sup>6</sup>Small purchases are contracts under \$25,000.00. Pier side Procurement does a tremendous amount of small purchases for ships and operating forces whose Unit Identification Code (UIC) starts with "R" for Pacific Fleet and "V" for Atlantic Fleet, e.g., V21233 is the USS CARR (FFG-52). Pier side Procurement will not be incorporated into DBOF at this time.

identification very difficult. Awarding one large contract could cost substantially more than another. A Process Action Team (PAT) headed by NAVSUP, Code 02, reviewed the contracting process for the appropriate output mechanism and pricing structure. As a result of this study, the PAT recommended using the Productive Unit Resource (PUR) as a large contracting output.<sup>7</sup> The PUR is a value developed annually through a sophisticated unit costing system designed by NAVSUP to assist in budgeting the various NAVSUP activities. For example, the Fleet and Industrial Supply Centers produced 30,255 Productive Unit Resources in FY 92 large contracts at a cost of \$11,292,000. In unit costing, this equates one PUR to \$373.23. An example of the tentative pricing schedule for Fleet and Industrial Supply Centers is shown as Table 1-1.

Contract Amount (in Thousands)	Number of PUR times PUR rate	Unit Cost
\$25 - \$100	4 (times \$373.23)	\$1,492.92
\$100 - \$1,000	12 (times \$373.23)	\$4,478.76
Greater than \$1,000	15 (times \$373.23)	\$5,598.45

All "start up" programs have weaknesses. This brief analysis of Naval contracting services' approach to Unit Cost Resourcing highlights three significant weaknesses, most of

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<sup>7</sup>An in depth knowledge of the PUR system is not required for the purposes of this thesis.



which can be directly attributable to an inadequate accounting system.<sup>8</sup>

First, unit total costs are too highly aggregated to serve as anything more than a cursory productivity index....

A second, more subtle problem is that DBOF business areas spread total costs over all goods and services which assumes that fixed and variable costs are driven by the same causal factors....

The third, and most obvious, problem with average unit costing is the real potential for a funding shortfall. Because some costs are truly fixed, there is no question that earned authority under UCR [Unit Cost Resourcing] will be insufficient. Since output will most likely decline for the foreseeable future average unit costing threatens to cut into the fixed cost of continuing operations. (Hough93, p. 17)

Hough breaks fixed costs down into two distinct categories. First, "capacity costs" which are defined as the absolute minimal level of expenses necessary to maintain the installation's normal operating capacity plus minimum expenses necessary to preserve essential wartime surge capacity. These costs cannot be altered in the short run. Second, there is "discretionary fixed costs" which are the expenditures above the minimal level that enhance operations without directly increasing capacity. These costs are part of the current year budget process and therefore somewhat controllable.

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<sup>8</sup>The DBOF Implementation Plan addresses this problem and requires an interim standardized accounting system (Automated Payroll Cost and Personnel System), now called the Defense Business Management System, for all providers that do not have formal accounting systems.

## **G. CONCLUSIONS**

Hough states:

The management problem becomes one of compensating for the losses induced by not explicitly recognizing fixed costs. These losses will come first from any budget "slack" built into funding baselines over the years. After slack is absorbed, the function must cover fixed costs from any direct operating and maintenance funds received or else lower fixed costs. Of course, part of the incentive on UCR is to reduce discretionary fixed expenses where possible. (Hough93, p. 17)

There is significant pressure on managers and organizations to meet unit cost goals. To achieve unit cost goals, managers may forego discretionary expenditures to upgrade facilities, improve quality or augment training. Hence, potential long term gains may be lost for the benefit of short term savings. This appears to contradict the desired purpose of DBOF and Unit Cost Resourcing.

### **III. EFFICIENCY AND DBOF**

#### **A. INTRODUCTION**

One of the major objectives of the Defense Business Operations Fund (DBOF) is to introduce the efficiencies of the private market sector into DoD support operations. This is done through Unit Cost Resourcing (UCR).

This chapter will look at the need for commanding officers to risk short term investments for potential long term cost reductions and briefly summarize the economist view of private market efficiency, both technical and economic. For more information on efficiency and DBOF see; Gates and Terasawa, Implementing Unit Costing: Efficiency in Translating Policy to Practice, Naval Postgraduate School, Monterey, CA.

#### **B. TECHNICAL EFFICIENCY**

An activity is technically efficient when it is "minimizing production costs at any output level." (Gates93, p. 7) This is synonymous with operating at any point along the activities' Average Total Cost (ATC) curve. Figure 3-1 depicts two hypothetical ATC curves. For discussion purposes, let us say the upper ATC curve is for a Navy Regional Contracting Center (NRCC) which does not use automated procedures to generate contracts. The lower ATC curve represents a Fleet and Industrial Supply Center (FISC) which

utilizes a computer to generate the contract and develop the required historical files and records. This procedure substantially lowers its average total cost. While both activities are producing in a technically efficient way, the FISC can produce an equal quantity at a lower unit cost in all instances.<sup>9</sup>

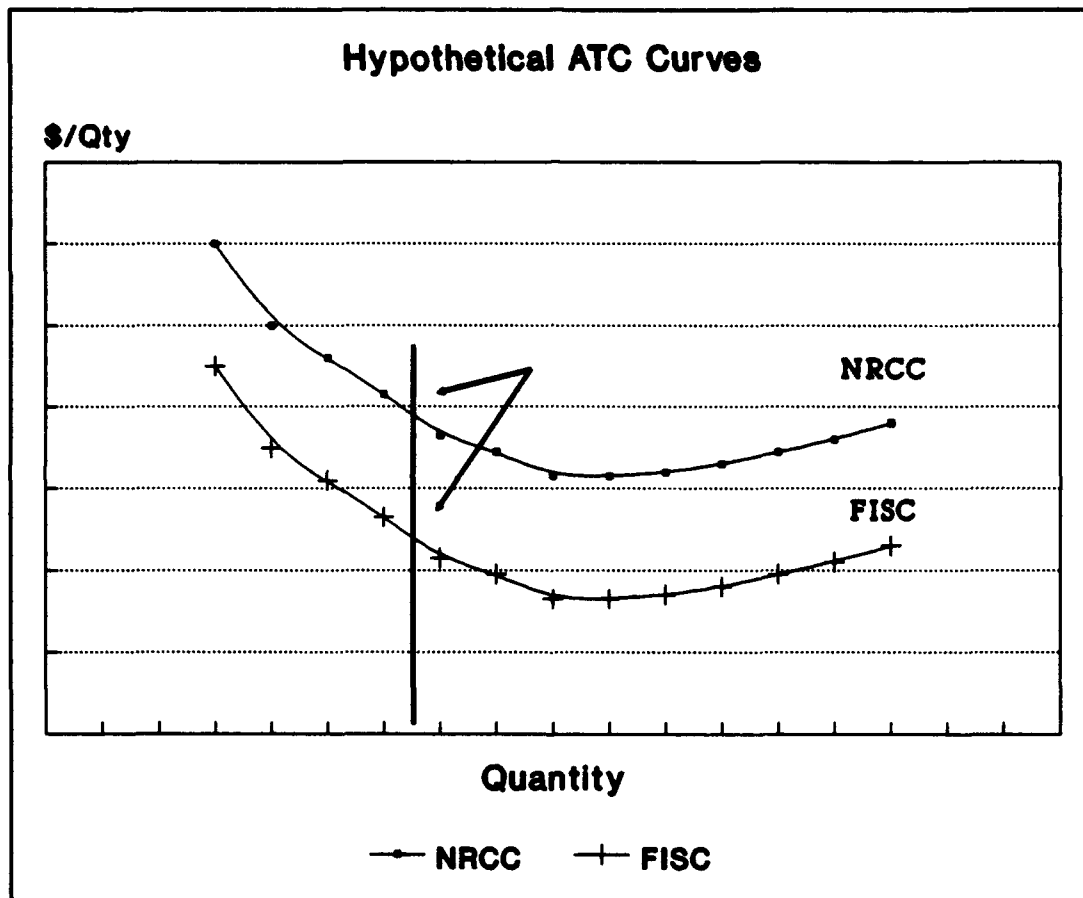


Figure 3-1

In order for the NRCC to move down to the lower ATC curve and compete with the FISC, the NRCC must use some

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<sup>9</sup>While both are technically efficient, neither is producing the right quantity to achieve the lowest possible unit cost.

discretionary funding or acquire capital investment funding to procure a computer and the required training.

### **C. ECONOMIC EFFICIENCY**

Economic efficiency requires:

1. Expanding output as long as the incremental benefit of one more unit of output (i.e., marginal benefit or MB) exceeds the incremental cost of producing that unit (i.e., marginal cost or MC). (Gates93, p. 6)
2. Costs must be measured in terms of opportunity costs and production must be technically efficient. (Gates93, p. 6)

Truly efficient organizations operate economically efficient. That is, they are producing the right amount with no excess or idle capacity ( $MC=MB$ ) and their production costs are minimized for that level output.

DoD has stated providers must meet all demand at the regulated price. The regulated price is computed to generate zero profits. DoD's intervention and regulation significantly hinders suppliers from achieving requirement one above, producing the right amount. Therefore, more than likely economic efficiency can not be achieved.

### **D. EFFICIENCY AND DBOF**

Under DBOF, economic efficiency can not be achieved. Instead, providers are encouraged to operate where demand crosses ATC. This is the point where the producer breaks even. Producers are also rewarded for having low unit costs.

Thus, they are encouraged to produce close to the minimum point on their ATC curve, see Figure 3-2. This leaves three possible outcomes 1) demand intersects the ATC curve in the optimal range (Figure 3-2), 2) demand intersects ATC to the left of the optimal range, or 3) demand intersects ATC to the right of the optimal range.

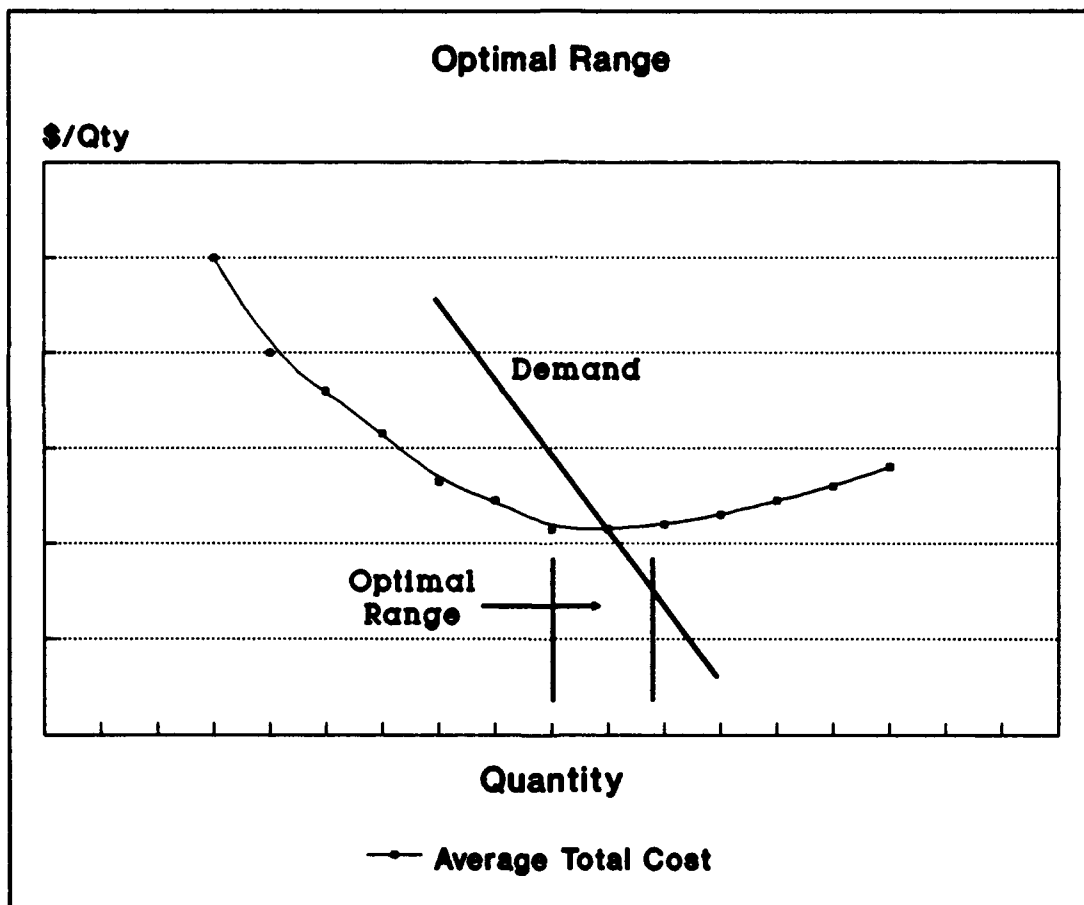


Figure 3-2

To improve command performance and comparisons with other similar activities, an activity producing within the optimal

range should concentrate on maintaining demand and reducing unit cost to attract additional demand. This is reflected by a shift in the ATC curve down and to the right, see Figure 3-3. Movement of the ATC curve would require either a short term investment to enhance quality, a process improvement reducing cost or an ease in regulations which resulted in greater efficiency.

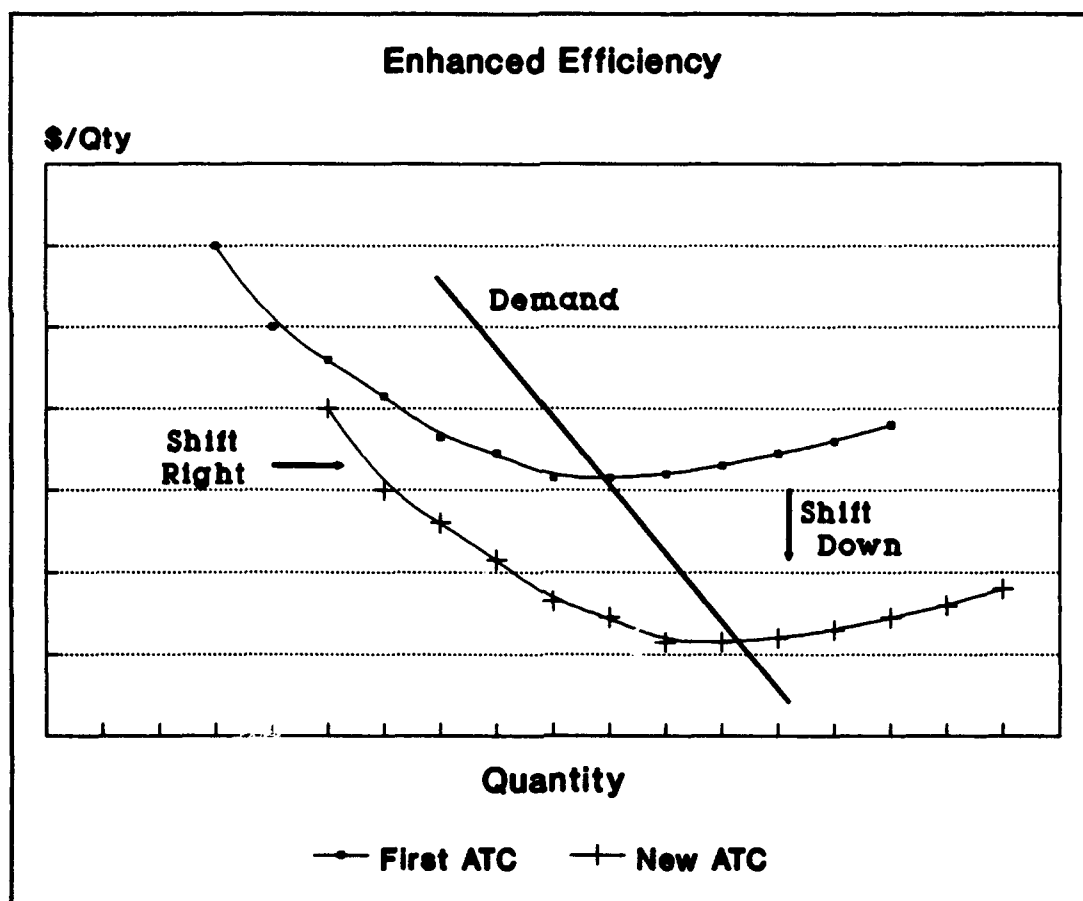


Figure 3-3

An activity producing where demand intersects to the left of the optimal range must increase demand or reduce costs to

be competitive, see Figure 3-4. This situation is indicative of a provider who has excess capacity. As Chapter IV will indicate, demand is generally based on proximity of customer to provider. Since prices are fixed at the stabilized rate, producers have little influence on demand. Providers with excess capacity should concentrate on improving quality to increase demand. However, other actions can be taken. For instance, saving can generally be achieved by reducing work force or facilities. These actions do not require additional short term funding. Under DBOF, competition between suppliers will motivate providers to take these actions.

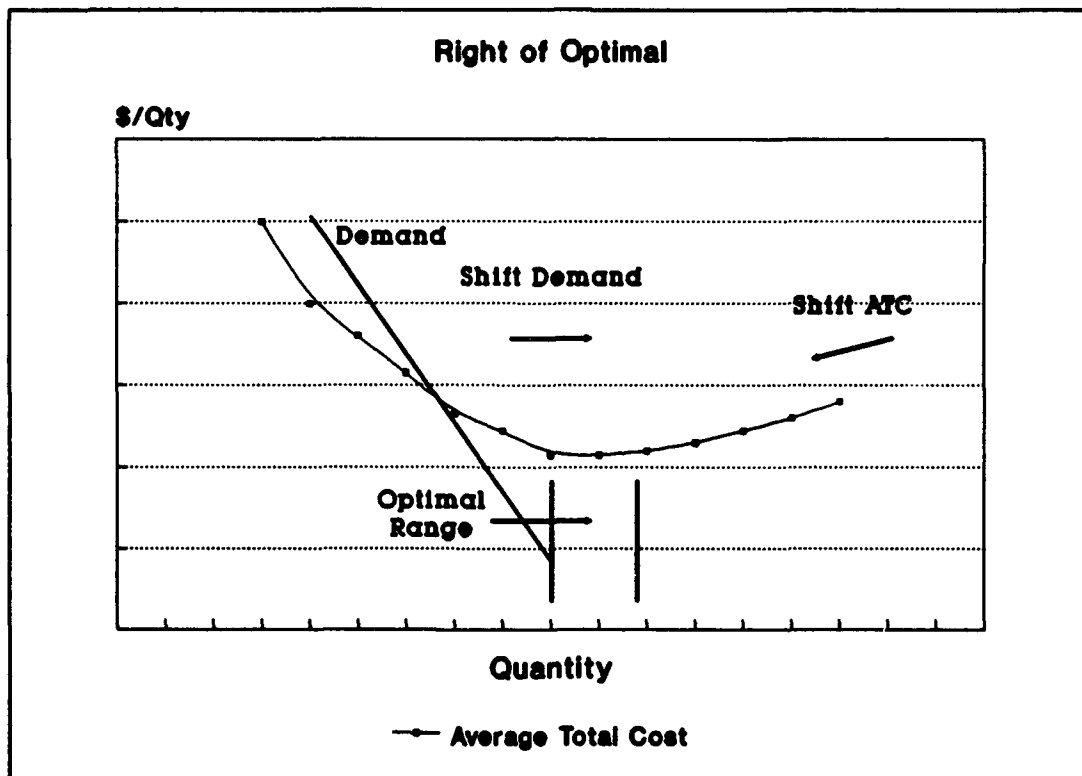


Figure 3-4



Activities producing to the right of the optimal range on the ATC curve are in the worst possible position. This is indicative of a provider who has a backlog of demand and can not keep up with requirements. In order to compete, this provider must reduce demand and give up business or increase efficiency to lower the unit cost, see Figure 3-5.<sup>10</sup> Increasing efficiency requires short term investment capital.

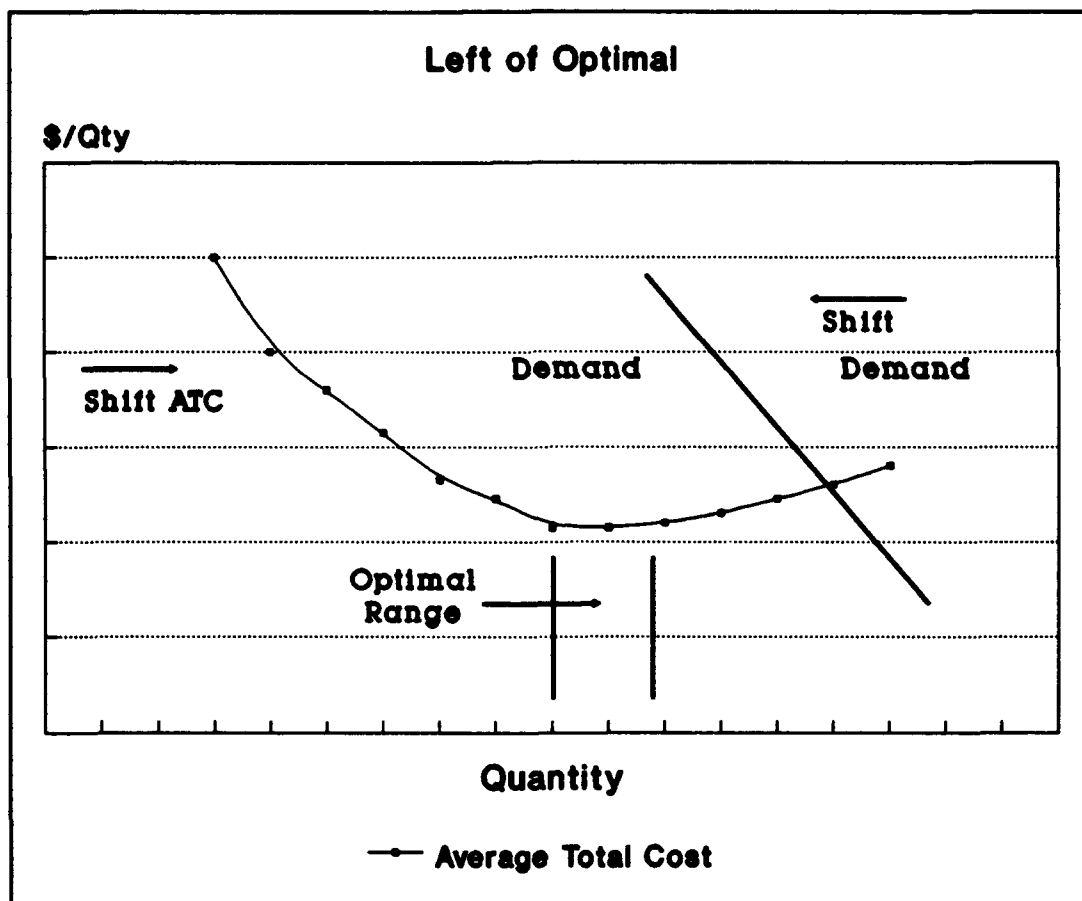


Figure 3-5

<sup>10</sup> A basic tenant of DBOF is providers will meet all demand at the established price. Reducing demand may be difficult.

## **E. CONCLUSIONS**

One goal of DBOF is to provide quality services at the lowest possible cost or at the lowest point on the ATC curve. The objective of this research is to determine if DBOF provides the incentive and resources to accommodate moving to this area of technical efficiency. In situations where a provider has excess demand or desires to reduce cost and increase efficiency, additional short term funding may be required. As will be discussed in Chapters IV and V, competition between contracting activities should provide the necessary incentive for activities with excess capacity to reduce costs. Unfortunately, demand is continuously fluctuating. Contracting activities must constantly monitor demand and ATC for optimal performance. This will frequently generate requirements for short term investments under the \$25,000.00 investment criteria.

Unit Cost Resourcing divides total cost by anticipated workload, then sets a lower unit cost target to motivate providers to reduce costs. In time, the unit cost target must fall on or below the ATC curve. When the unit cost target falls below the ATC curve for a provider, the commanding officer will have no discretionary funding to enhance efficiency or maintain facilities. Commanding officers of higher unit cost providers then may decide to forego the risk of short term investments under \$25,000.00, which could

possibly reduce long term costs, to avoid suffering adverse personal evaluations.

#### **IV. DATA PRESENTATION AND ANALYSIS**

##### **A. INTRODUCTION**

The Government has long recognized the value of profit in the private business sector. Under competitive conditions, market forces determine the appropriate level of profit and the Government accepts this as "reasonable." However, when market competition does not exist, the Government calculates a reasonable level of profit and negotiates contracts, utilizing the Weighted Guidelines Method. These profits reward risk takers for accepting tasks requiring higher levels of skill and encourage cost responsibility and cost effective capital investment. (ASPM86, p. 4-2)

The Defense Business Operations Fund works on a rolling break-even process which does not allow contracting activities to carry profits generated in one fiscal year to the next.<sup>11</sup> If a contracting activity makes a profit one year, OSD will reduce the target unit cost the next year, making these goals more difficult to achieve. When the cost of awarding a contract is reduced to the optimal or "best cost," where will contracting activities find the incentive and funding to take

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<sup>11</sup>While DBOF does not allow savings to be carried forward to the next fiscal year, many advantages still accrue. Managers are no longer tied down to line item accounting and can utilize the funding in a way that is most beneficial to the organization.

the risks and make the investment for long term cost reductions?

The objective of this research was to determine if commanding officers of contracting activities felt DBOF would provide a business environment with the incentives and resources to truly reduce contracting costs. Alternatively, does DBOF just provide lower unit cost goals without the accompanying resources to obtain those goals. Commanding officers of all four Navy Regional Contracting Centers (NRCC) and ten Fleet and Industrial Support Centers (FISC) were surveyed in the following areas:

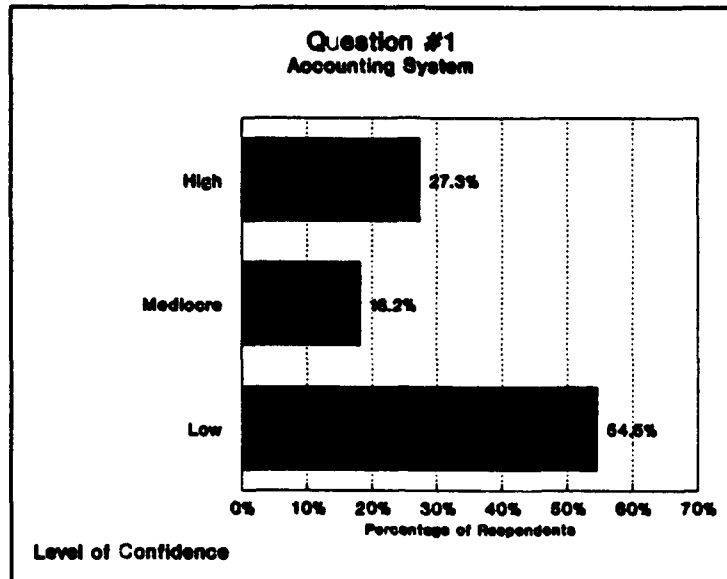
1. Adequacy of the present cost accounting system to provide valuable decision making information to contracting managers.
2. Competition anticipated between contracting activities based on relative unit cost.
3. Adequacy of funding under DBOF and plans to enhance budgeting.
4. Knowledge of incentives as they apply to DBOF and possible improvements.

Of the fourteen activities surveyed, only the three overseas activities did not respond to the survey. (The survey questions and data are presented by the area they queried, not in numerical sequence.)

#### **1. Accounting Systems**

Questions about accounting systems were designed to determine if accounting systems provide adequate management information to isolate the cost of contracting services.

Question 1. DBOF replaces mission funding with unit costing. How confident are you that your activity's cost accounting system adequately identifies cost data for providing contracting services?



Activities commented that the accounting system does not:

- Breakdown cost beyond labor and other expenses.
- Consistently allocate indirect costs at activities where the burden is shared across functional branches. For example, FISCs do not allocate any overhead between the different departments such as customer service, transportation and regional contracting.

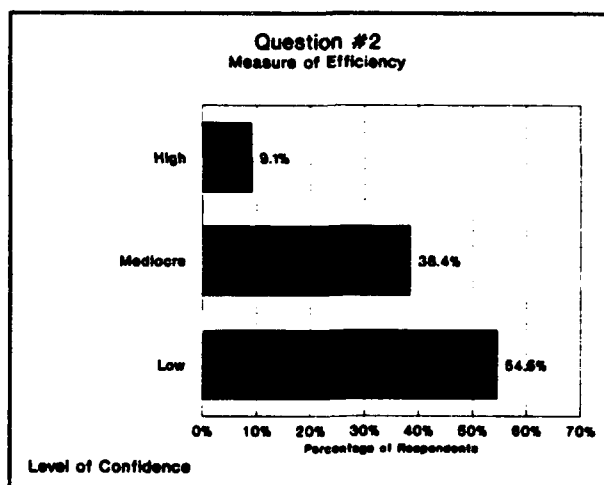
The majority of commanding officers felt that the accounting system could not generate reliable decision making information for unit costing purposes. Resources will be required to upgrade these systems to provide the kind of information needed to effectively analyze cost drivers and determine where savings can be achieved. Until such accounting systems are in place, there is no accurate way to determine if each activity is reporting and accumulating

information in a consistent manner. Activities having more than one cost center, i.e., the FISCs, could enhance their unit cost by burdening more efficient and/or less competitive cost centers with a greater share of the overhead. According to one budget analyst, "It's like comparing apples to oranges." (Moore93)

## 2. Competition

Three questions were asked to assess the expected level of competition between activities. There was one straight forward question and two implicit indicators. The implicit indicators involve 1)awareness of other activities' unit costs and 2)perceived accuracy of unit cost in measuring effectiveness and efficiency.

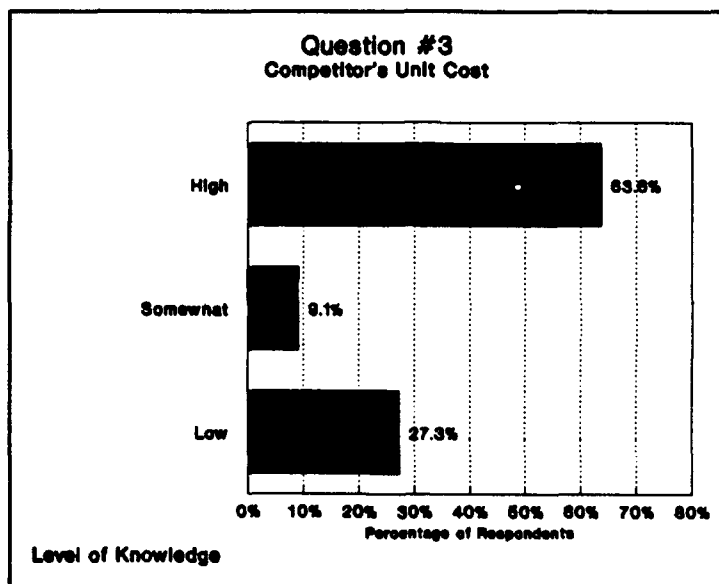
Question 2. Unit costing could easily be utilized to evaluate how efficient (competitive) an organization or commanding officer is at producing a service. With downsizing playing such a vital role in defense cuts, high unit cost organizations would likely be the first screened for realignment and closure. Do you feel the unit cost is an effective measure of efficiency and effectiveness?



The majority of activities felt unit cost was a poor indicator of effectiveness because:

- Methods for allocating significant fixed costs and overhead could preclude fairly evaluating activities using unit cost.
- Differing organizational structures (e.g., Naval Regional Contract Center versus a Fleet and Industrial Supply Center) and differing accounting methods distort unit costs making comparison ineffective.

Question 3. Do you have a relative idea of the unit cost for contracting services at other FISCs and NRCCs?

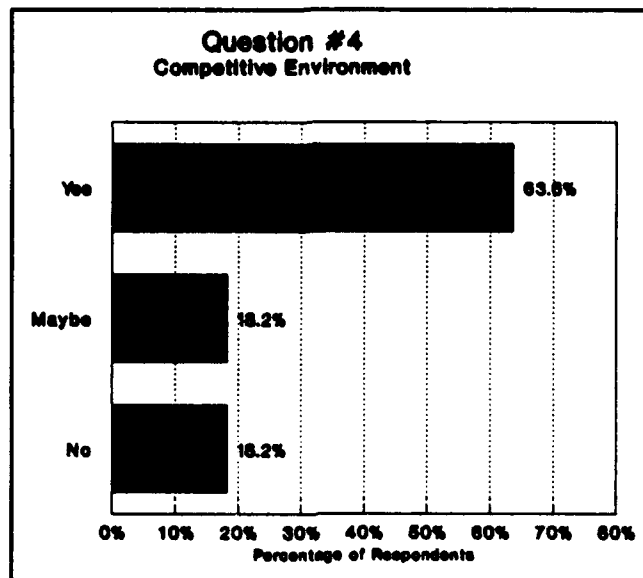


Comments included:

- Unit cost less overhead is readily available from NAVSUP 02E (through NAVSUP's Productive Unit Resource system).
- Reported (NAVSUP 02E) unit costs are inaccurate.



Question 4. Do you feel competition between contracting activities for customers will develop?



Comments included:

- Competition is happening now with customers who have not identified any particular contracting activity.
- The most important element is proximity between customer and provider, not unit cost. Better the devil you know.
- Competition should only be allowed on a yearly basis.

The responses to these questions indicates three perceptions: 1)unit cost is not considered an effective efficiency measure; 2)activities are presently sensitive to unit cost, both their own and other providers; and 3)competition is happening now and is expected to continue into the future. NAVSUP's budgeting system generates and disseminates unit cost information on contracting activities.

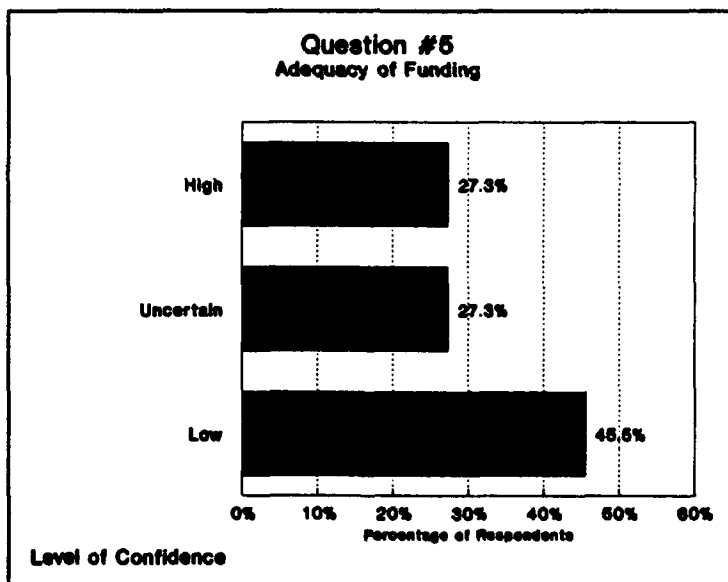
Activities expressed concern with inconsistencies between accounting systems when evaluating an activity based

on unit cost rather than their ability to produce at a level where marginal cost equals marginal benefit. Those activities which produce closest to where marginal cost equals marginal benefit are the most efficient.

### 3. Adequacy of Funding

Commanding officers were asked three questions to assess the adequacy of anticipated funding under DBOF.

Question 5. With the loss of mission funding, do you feel you will have access to adequate, reliable funding to carry out quality personnel training, equipment replacement, technology upgrading or facilities maintenance?

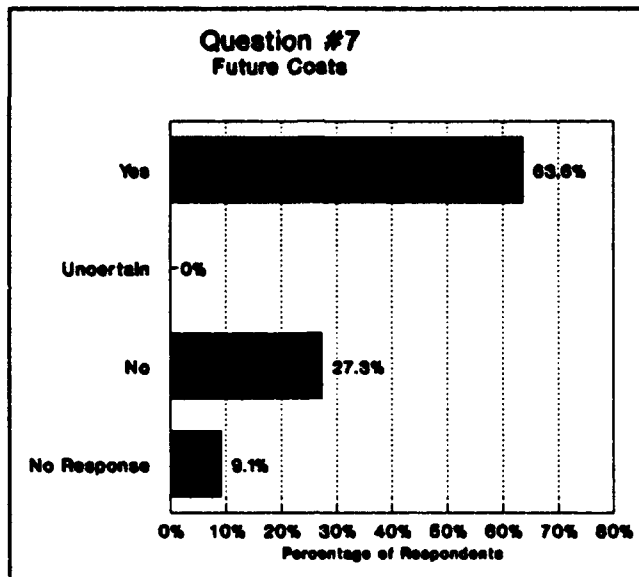


Comments included:

- If unit costing is implemented correctly an organization could have more than enough funding or at least more than provided under mission funding.
- If not regulated by headquarters, activities will control their own destiny in the marketplace. However, this is unlikely.

- Funding will be tied to ability to maintain or expand customer base.

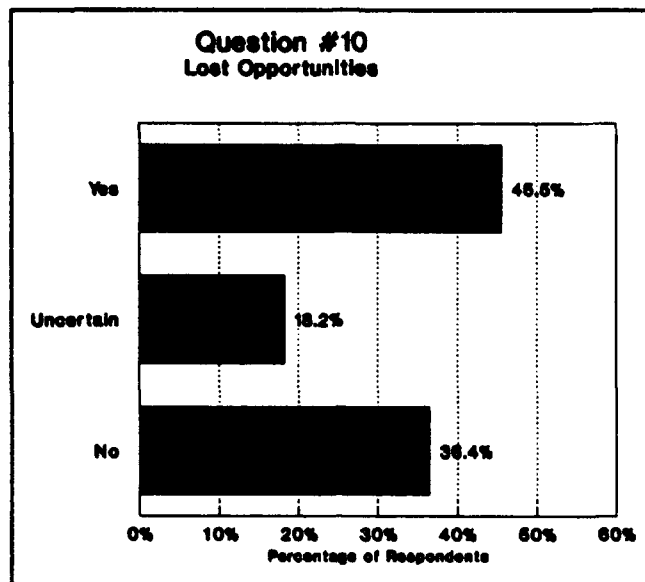
Question 7. Will you include elements of future costs in your unit cost plan for reinvestment?



Comments included:

- This may result in pricing yourself out of the market. Better to rely on profits generated each year.
- Once the customer base has been established, reinvestment costs will have to be factored in to increase productivity.
- Costs should be part of annual budget planning.

Question 10. Under unit costing, non-recurring expenses must be planned well in advance to ensure sufficient funding is available. Do you believe this will result in the loss of many short notice opportunities?



Comments included:

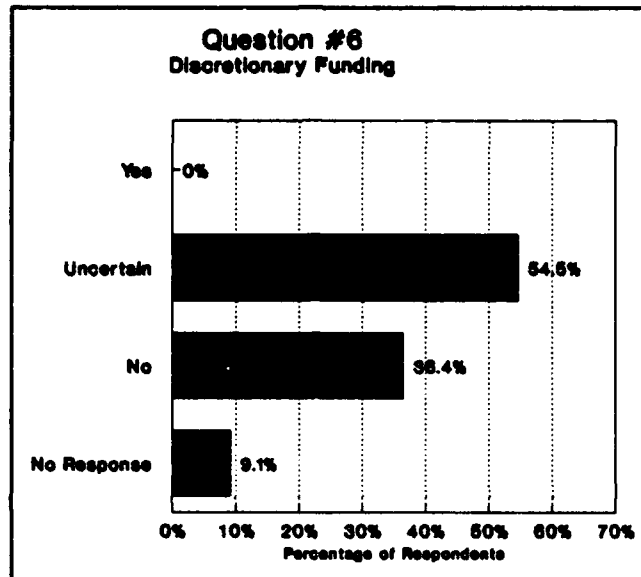
- Plan on producing additional work units to generate extra funds.
- Funding can be raised through increased efficiency. This would increase the number of units produced.
- Expenses need to be addressed in annual budget plans.

There is a slight feeling that funding may be inadequate under DBOF. However, activities anticipate offsetting lost resources and opportunities by aggressive annual budget planning, generating profit by selling additional units of output, and negotiating favorable unit cost goals which allow for future capital investment.

#### 4. DBOF Incentive Structure

Five questions dealt with incentives in DBOF, including whether and how to improve the incentive structure.

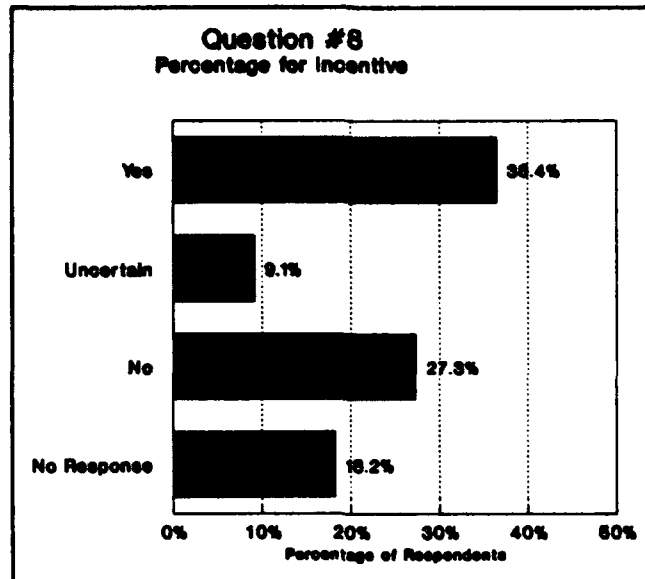
Question 6. Will you count on gaining most of this discretionary funding (training, equipment replacement, technology) from saving generated by cutting unit costs?



Comments included:

- Reducing cost may require sacrificing quality and be counter productive.
- Discretionary funding can be obtained by increasing efficiency and output or providing better service to the customer.

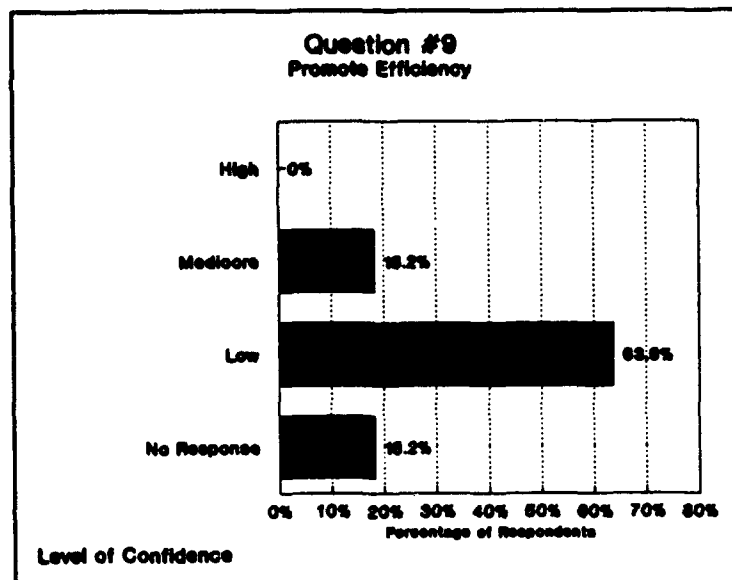
Question 8. Do you feel an automatic percentage should be applied to the unit cost of awarding a contract to provide an incentive to take risks and invest in technology to become more efficient? (e.g., 4%)



Comments included:

- Additional funding would more likely end up in awards, inflated grade structure or furniture rather than productivity improvements.
- Implies a centrally controlled process. Centralization is the fundamental impediment to competition and discretionary investment.

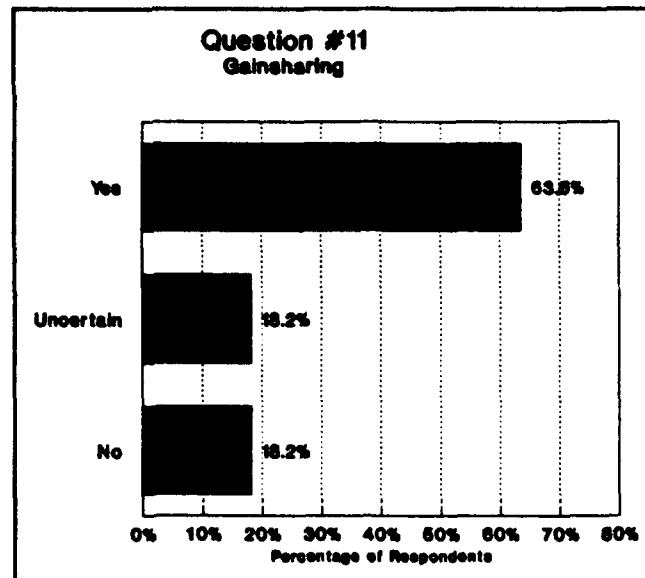
Question 9. Do you feel confident the incentive structure in DBOF is sufficient to reward effective organizations and promote efficiency?



Comments included:

- Regulated incentives are not effective.
- Total Quality Leadership (TQL) process may provide incentive.

Question 11. Gainsharing is an incentive structure used to motivate employees to reduce production costs. Aviation Depot Cherry Point employees have received such cash awards. Do you feel this is an appropriate incentive?

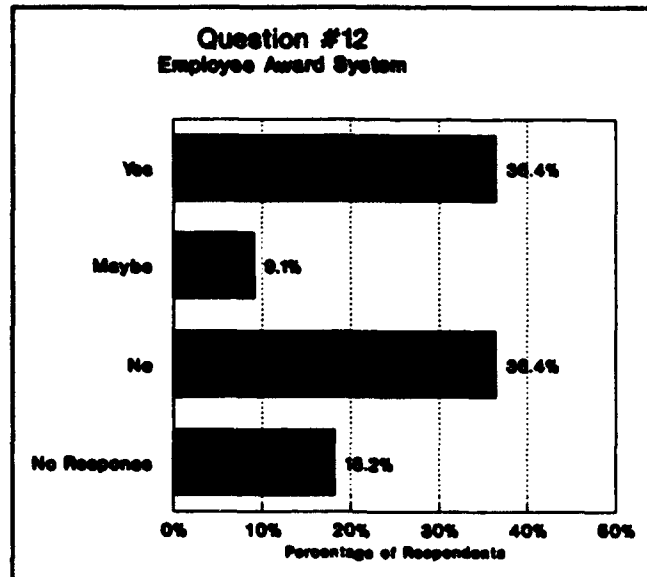


Comments included:

- Cost can be reduced by sacrificing quality.
- Money is not the only incentive, as postulated by TQL.
- Must have reliable cost and output data first.



Question 12. Could the employee award system replace gainsharing if sufficient funds were available?



Comments included:

- Present employee award system needs improvement.
- TQL works.
- Awards should be based on efficiency improvements.

Analysis of these questions indicates activities:

1. Believe it may be easier to increase output rather than cut costs.
2. Were non-committal to a flat percentage fee for profit.
3. Were apprehensive of DBOF's ability to reward effective and efficient organizations.
4. Felt gainsharing was the best reward system.

The majority felt that DBOF's incentive structure did not reward efficiency and effectiveness. Specifically, commanding officers are left with the employee evaluation systems, gainsharing, personnel award systems and TQL/TQM.

The last question was a general survey question asking respondents if they felt incentive structures were appropriate and if they had any "better ideas." All activities stated, "yes" incentive programs are appropriate. However, the only response provided was to allow activities to retain and carry unused profits forward to the next fiscal year. This is not a novel idea and has considerable support and merit. The city of Visalia, CA successfully adopted an Expenditure Control Budget.

Called the Expenditure Control Budget, it made two simple changes. First, it eliminated all line items within departmental budgets - freeing managers to move resources around as needs shifted. Second, it allowed departments to keep what they didn't spend from one year to the next, so they could shift unused funds to new priorities. (Osborne92, p. 3)

## **B. CONCLUSIONS**

The accounting system used by NRCCs and FISCs is inadequate for unit cost reporting purposes and managerial decision making. This is supported by the recent GAO Testimony before the House Armed Services Committee which states, "Current cost accounting systems are fragmented, costly to maintain, and not effectively utilized by management." (GAO93, p. 10) This same report is very critical of the Defense Business Management System, previously known as the Automated Payroll, Cost, and Personnel System, which is to become the standard for DBOF activities.

Activities appear to consider DBOF "another form of budgeting." Funding to cover fixed discretionary expenditures must be planned and negotiated into the unit cost goal. Managers do see more freedom in using funding. However, this has an equal trade-off as availability is now dependent on output. Surprisingly, the majority of activities anticipate generating additional profits through an increase in output. In an era of downsizing, this may be more difficult than first imagined. Table 4-1 below is an abstract from the Naval Supply Systems Command Fiscal Years 1992, 1991, and 1990 Level of Difficulty report. This report suggests the demand for contracting services is decreasing.

Fiscal Year	Total Large Contract Actions Completed by FISCs	Total Large Contract Actions Completed by NRCCs	Total Large Contract Actions Throughout NAVSUP
FY90	5,370	7,021	12,391
FY91	5,205	7,283	12,388
FY92	4,962	6,696	11,658

Fiscal Year 1993 data is not available at this time. However, large contract actions decreased by 725 during Fiscal Year 1992. Fiscal Year 1992 was the prelude to downsizing. Generating additional output will be very competitive and probably restricted to contracting services at bases receiving new activities in the Base Realignment and Closure process.

Activities felt that generating profits by cutting unit cost was unlikely. The main thrust of concern was a loss of quality which would be counterproductive.

There was a slight feeling that some opportunities for improvement may be lost because of the potential loss of discretionary funding under DBOF. However, there was mixed feelings about adding a small percentage of profit to the unit cost of providing a service to customers for discretionary expenses. Most of the criticism centered around central control and regulation which may result.

It is clear that the majority of contracting activities felt an incentive structure under DBOF would be appropriate. However, no recommendations were made. This is partially due to the lack of information available on DBOF and what would be appropriate. The next chapter will analyze the advantages, disadvantages and incentives produced by chargeback methods used in the public and private sector and there application to DBOF.

## **V. INCENTIVE ANALYSIS**

### **A. INTRODUCTION**

Chapter IV survey results indicated that 63.6% of the commanding officers of contracting activities did not feel DBOF rewarded or motivated effective organizations to promote efficiency and effectiveness. This chapter looks at the way private and public sectors motivate divisions to achieve desired goals.

In the private sector, motivation and resources for cost reducing investments are provided through profit. This is not so in the public sector, where the goal is for socio-economic benefit, not profit.

Private sector managers are successful if they generate capital or equity to enhance the wealth of the firm's stockholders/owners. This can only be done through profit. Therefore, production and service managers have a strong incentive to reduce costs and increase profits (profit maximization) for job security, promotions and wage increases.<sup>12</sup>

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<sup>12</sup>In perfect competition, profit maximization occurs when a firm is operating at the point of economic efficiency. That is output expands until  $MB=MC$ , costs are measured in terms of opportunity costs and production costs are minimized, see Chapter III.

For perfect competition, there are at least two important aspects that lead to profit maximization. First, firms get to keep their profit and, secondly, market price is independent of the actions of any one firm. Therefore, if managers make an investment to reduce costs, they get the profits and their actions won't lead to forced lower prices in the future. These profits will continue until competing firms lower costs and price begins to fall. Under these conditions, managers are motivated to lower costs. They can retain some profits to make further cost reducing investments and stay ahead of their competitors.

Top level management passes this profit maximization incentive and capability to production and service divisions through chargeback methods or transfer pricing. These are methods to value the goods or services transferred from one department of an organization to another. Chargeback methods include: unallocated or free allocation, direct allocation and direct chargeback.<sup>13</sup>

This Chapter will look at the advantages, disadvantages and incentives of the different forms of chargeback methods used in public and private sector contracting. They are

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<sup>13</sup>Direct chargeback methods may be either cost based or profit based. Profit based direct chargeback is utilized when a firm desires to encourage profit maximization. It bases price on the competitive market price.

Unfortunately, there are few competitive market firms that provide contracting services. This makes it difficult to implement this strategy for contracting services in DoD. Therefore, profit based direct chargeback will not be reviewed in this thesis.

unallocated or free allocation and cost based forms of direct chargeback.

#### **B. UNALLOCATED OR FREE ALLOCATION COST CENTER**

Unallocated or Free Allocation cost centers are free cost centers. That is, other divisions (customers) do not pay for these services and may use them at will. The cost center manager is provided an annual budget, and expenses are treated as overhead or general and administrative costs.

There are some advantages to the unallocated cost center. It is administratively simple. Very low expenditures are required on the accounting system, as no chargeback system exists and costs are not tracked to users. Customers are encouraged to use the service as they incur no cost.

The disadvantages are significant. The customer sees the service as free and cost is not a consideration. This may cause irresponsible use. Also, the inability to establish cost data isolates the provider from competitive external pressure permitting and fostering inefficiencies.

Unallocated or free allocation cost centers do not motivate or provide the capability for managers to reduce costs and actually invites inefficiency. However, this system is best when managers desire to increase demand or foster implementation of a new service. (Cash93, p. 371) (Fisher93, p. 12)

## 1. Private Sector

An interview with a senior contracting executive of a large military contractor confirmed contracting services were presently being treated as an unallocated cost center.<sup>14</sup> The work center is provided an annual budget and no charges are made for output. As noted, this mechanism provides no incentive to reduce costs. However, one of the contracting executive's performance objectives is to stay within his yearly operating budget. Annually, the executive is graded and rewarded with a salary bonus of two to five percent depending on his overall performance evaluation.

During these times of extensive downsizing, this contractor is reallocating the contracting service costs. A small portion of the contracting department is treated as overhead. The major portion of cost is directly charged to applicable contracts. The contracting department's annual budget will be much smaller. Therefore, the firm's overhead rates will go down. However, depending on the contract type and terms, this may remove any incentive to reduce direct contracting costs passed along to the customer. Customers

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<sup>14</sup>Several attempts were made to evaluate chargeback mechanisms and accounting practices used by private sector government contracting offices. Unfortunately, most private sector firms will not readily divulge this information as it provides insight into the cost structure of the firm. This is considered proprietary data. In an interview, a DCAA auditor revealed that indirect costs associated with government contracting offices are generally treated as a General and Administrative expense.



making frequent changes, modifications and terminations, such as the Government, will pay higher costs, as they should.

## **2. Public Sector**

This thesis is focused toward Navy contracting activities which are unallocated cost centers. They presently do not charge for their services. Funding is provided through an annual operating budget, which they may not exceed.<sup>15</sup> Unfortunately, managers are not allowed to carry forward unobligated funding from one fiscal year's budget to the next. This reduces the incentive for cost containment and creates the well known "use or lose it" philosophy. Since managers may not exceed their budget, cost savings are rarely part of the evaluation process. However, efficiency is noted when budget cuts occur. Managers (military officers) generally note cost reductions by writing favorable comments on personnel evaluations (fitness reports). For example, these comments may note: maintained the highest level of customer service and increased output by 10% while reducing the annual budget by 12%.

Similarly, the unallocated cost center mechanism encourages customers to use the contracting system. This may

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<sup>15</sup>The Navy portion of Fleet and Industrial Supply Centers and Navy Regional Contracting Centers negotiate their annual budget with the Naval Supply Systems Command based on the Productive Unit Resource (PUR) system. This is a negotiated budgeting system, based on projected output, very similar to DBOF. Commanding officers attribute this system with generating much of the competition presently experienced in Navy contracting.

create extreme demand and excess workload. For example, purchases over \$25,000.00 require special contracting procedures which significantly add to the processing/response time. To save time, customers are motivated to increase the provider's small purchase workload by splitting these requirements into several requests under \$25,000.00. This practice, called "splitting," is against DoD regulations and is inefficient. It diminishes the opportunity for larger buys, achieving economies of scale, resulting in higher purchase prices and processing costs.

### **C. COST BASED DIRECT CHARGEBACK**

There are three basic forms of cost based pricing. They are flexible pricing, average cost pricing and standard cost pricing. Flexible pricing is a form of demand based pricing. Different prices are set based on priority or peak loading. (Fisher93, p. 24) This is not used in contracting by the private or public sector and will not be analyzed further. Average cost pricing and standard cost pricing are very similar and deserve further study.

#### **1. Average Cost Pricing**

Average cost pricing sets the price equal to the total cost of service divided by total output. The advantages are obvious: administrative simplicity and full cost recovery.

However, there are numerous disadvantages. As briefly discussed in Chapter III, price is set where demand equals

average total cost. Price completely disregards marginal cost. True efficiency occurs where demand equals marginal cost, not average total cost. Additionally, average costing encourages customers to consume services until their marginal benefit equals average total cost vice the efficient point where their marginal benefit equals marginal cost. As a result, the service may be under or over utilized. Therein lays the inefficiency. For example, if the service is under utilized, the efficiency loss is represented by the triangle labeled A-B-C in Figure 5-1. If price is set above marginal cost, consumers will search for alternative providers even if the cost of serving the consumer is lower than the price charged. (Gates93, p. 15) (Fisher93, p. 21)

Another disadvantage results because price equals total cost divided by output. Therefore, price is sensitive to demand. During periods of high demand, the price falls. Likewise, during periods of low demand the price rises. This encourages exactly the opposite of the desired effect. When demand is low, the high price keeps others from procuring the service to reduce the price. High demand drives the cost down so low that more demand is generated, perhaps overburdening the provider. (Fisher93, p. 23)

Average cost pricing is full cost recovery. There is no profit factor built into the mechanism. Managers do not reap any additional benefit from the sale of service. Resources are not made available for cost reducing investment,

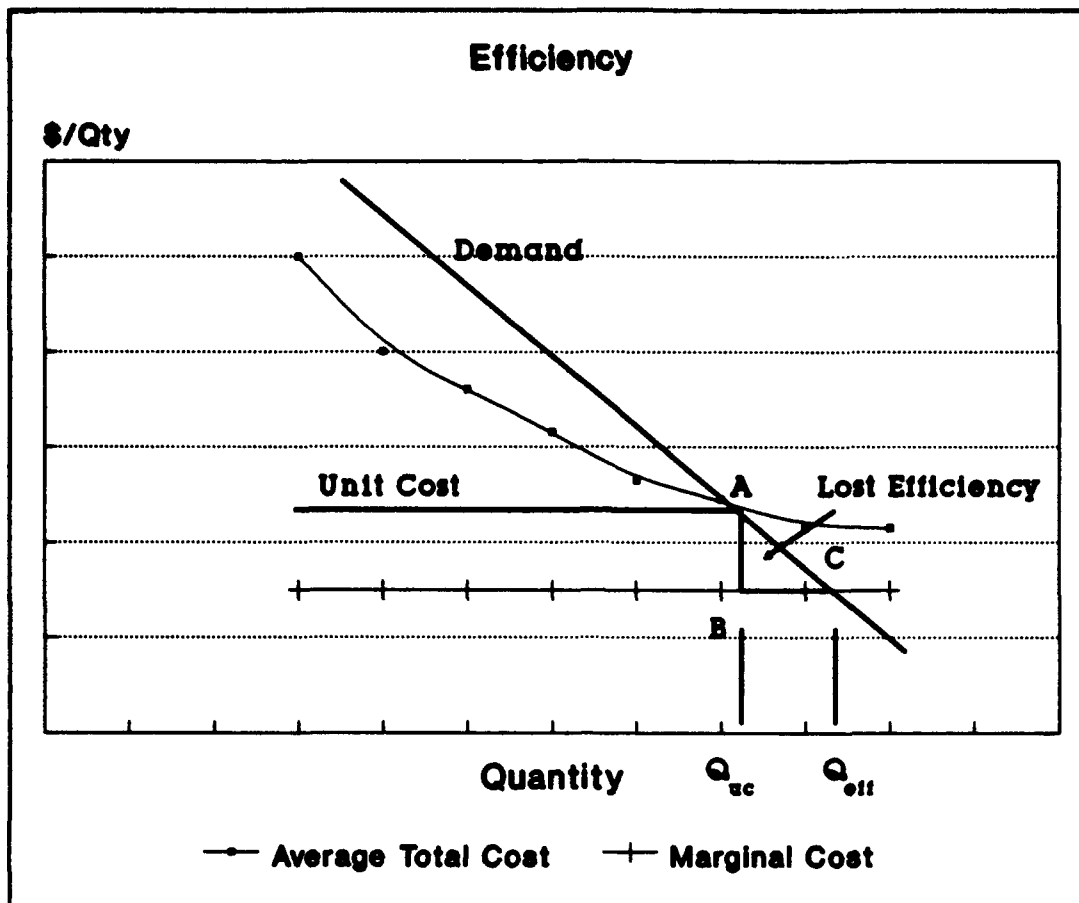


Figure 5-1

or personnel incentives, such as gainsharing, which will be discussed later in this Chapter.

Lastly, price serves as an indicator of value. The more value a consumer places on a service the more he is willing to pay in price during periods of excess demand. This is best illustrated by the cost of portable electric generators after a hurricane has knocked out power for an extended time. The consumer who wants to save \$2,000.00 of frozen meat in his home freezer will be willing to pay more and will receive a greater benefit from a portable generator

than the consumer who wants to watch TV. In average costing, since all users are charged the same price irrespective of the benefit they receive, there can be no value or priority placed on the units provided.

Does average cost pricing encourage efficient performance by service providers? Full cost recovery is guaranteed because total cost is divided by demand. Additionally, price goes down with total cost. This will increase demand and workload. As costs go up, so do prices, which decreases demand. If one does not fear losing his job, this provides no incentive for managers to reduce price/costs and may motivate slight increases in costs to reduce the amount of work required. The lack of a natural incentive mechanism, such as profit maximization, increases reliance on more punitive mechanisms, like adverse performance evaluations.

## **2. Standard Cost Pricing**

Standard costing is computed by dividing projected total cost by demand. The price charged per unit then is fixed for a given period of time. Obviously, this method of costing will produce similar advantages and disadvantages as average cost pricing. The significant incentive advantage is profit or losses may be generated. Price is based on a projected value and set for a fixed amount of time. If costs are lowered and demand remains the same or is greater, a

profit will be generated. Obviously, if costs are higher or projected demand is not achieved, losses will be generated.

This accounts for an additional disadvantage. Since the price is based on projected information, the accuracy of the projections becomes very important. If the cost is projected low or demand is projected high, the price will not cover all the costs of providing the service. Similarly, if the cost is projected high or demand is projected low full recovery of costs will occur. Therefore, managers are motivated to distort demand or cost projections to serve their favor. (Fisher93, p. 24) (Gates93, p. 12)

### **3. Private Sector**

Ultimately, the goal of any private sector organization is profit maximization. The different chargeback mechanisms allow the organization to achieve goals in the most expeditious manner. For example, if a firm desires wide spread utilization and quick implementation of a service, unallocated or free allocation methods should be utilized. These cost centers are free to all users and customers will rapidly find uses for such services and products to increase their own cost center's efficiency or effectiveness.

As wide spread demand for an unallocated cost center's services grow, demand may become too great. This leads naturally to a cost based work center. Costs basis will ensure the customers value that service at least as much as

the price charged for the service. However, this does not address the fact that the service is not being provided in the most efficient manner possible.

The last logical progression in a private sector market is a profit center. Here services are valued at market prices and customers are free to utilize "in house" services or outside competitors. This motivates the previously unallocated or cost based work centers to be competitive with other producers and ensures the service is provided in the most effective and efficient manner possible. This final step will result in the firm's ultimate goal of profit maximization.

Some divisions will never progress beyond an unallocated cost center. Examples of such services are the home office, accounting and traditionally contracting. These services are frequently not available in the outside market and generate little "value added" to the firm's outputs. In these cases, the private sector motivates personnel to be efficient and effective through the budget and performance appraisal systems.

#### **4. Public Sector**

The public sector provides services for the welfare and good of its citizens. Since these same citizens pay for these services, profit maximization is a controversial goal. However, cost effectiveness and efficiency, two outcomes

associated with profit maximization, are appropriate goals. They ensure the lowest cost burden on the citizens for public services. In many cases, Government producers are precluded from increasing efficiency and maximizing profits. The Government operates in an imperfect market and must consider many socio-economic goals. How then does the public sector encourage cost efficiency and effectiveness in their organizations?

Profit based chargeback would encourage efficiency by making Government contracting services compete with competitive market firms. Unfortunately, there are no competitive market firms selling this service. At the other extreme unallocated chargeback methods are not effective or efficient and increase demand until the user receives little or no value from the last units demanded. The best alternative available is cost based chargeback methods. Cost based chargebacks provide only limited incentives for providers to economize, and customers make usage decisions based on the services's average total cost rather than marginal cost.

In addition, cost based pricing is cost sensitive. As costs go down, price (unit cost in DBOF) goes down to equal cost. This leaves no profit mechanism to 1) motivate personnel or 2) retain funds to reinvest in cost reduction measures. The Government has undertaken profit gainsharing to motivate



personnel to reduce costs.<sup>16</sup> However, no initiatives have been enacted to retain profits and provide the capability for cost reducing investment. One suggested concept to address retained profits and motivate cost reduction is success sharing. Profit gainsharing and success sharing provide a complete incentive package, which motivates personnel and provides the resources for cost reduction.

**a. Profit Gainsharing**

Gainsharing plans are used in DoD as a means to motivate workers to increase productivity and reduce costs. This initiative is simplistic in nature. It involves comparing what this year's output would have cost at last year's efficiency levels. Then a fraction of the profit earned through cost savings can be retained by the support activity for distribution to employees. (Melese93, p. 3) The remaining profit is kept by the Government. "For companies that are serious about using incentives to motivate workers, gainsharing is the best bet." (Hovell90, p. 34) Additionally, 63.6% of commanding officers felt this was an effective incentive.

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<sup>16</sup>There are numerous incentive programs designed to motivate a single individual or small group of employees, such as performance bonuses, commissions, and beneficial suggestions. This thesis deals with motivating an organization or division. Therefore, these programs are not within the scope of this thesis and not discussed.

The advantages to gainsharing are: activities must reduce cost or increase efficiency to qualify and Government reaps a portion of the profits. The disadvantages are: it is difficult and administratively burdensome to compute the cost saving, computation requires an effective accounting system, and product quality can be sacrificed to reduce cost.<sup>17</sup>

OSD is presently reviewing gainsharing policy and procedures. There is concern over possible computational abuses which have discredited the program in recent years. (Bishop93)

#### *b. Success Sharing*

Success sharing is an innovative incentive structure suggested by Dr. Francois Melese. It addresses the expressed objectives of the Defense Business Operations Fund: to encourage providers to act more like a business, to increase the visibility of the total cost of a manager's decision, and reduce the average total cost (unit cost) of providing a service over time.

Success sharing is an incentive "where the allowed price next period, while lowered to recognize any cost savings achieved, is allowed to be a fraction higher than it could be, to reward the support activity." (Melese93, p. 3) Success

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<sup>17</sup>The Navy has fully embraced TQL/TQM. TQL plays a vital role in process and quality control. As such, it is the Navy's most effective tool to ensure unit costs are not achieved at the cost of quality.

sharing is conceived to work in conjunction with gainsharing as a motivational tool.

This concept could be rather simplistic to administer. Calculations could be as easy as measuring the reduction in average total cost from one year to the next.

The two main disadvantages to success sharing are similar to those of other programs. In particular, unit cost reduction may come at the expense of quality. Furthermore, gainsharing is an integral part of the plan. Therefore, the disadvantages associated with gainsharing apply to success sharing.

#### **D. CONCLUSIONS**

Profit plays a vital role in the private sector including the incentive for personnel to reduce costs and the capability or resources to make cost reducing investments. Both facets are equally important. If a producer is motivated to make a cost reducing investment, but is not provided the capability, the investment can't be made. Similarly, if the producer is provided the capability but not the incentive, the profits will be spent on items which provide personal satisfaction, like new furniture. This is why it is so important to address both functions of profit in the public sector.

DBOF and Unit Cost Resourcing are a form of standard cost pricing. As such, they exhibit many of the same advantages and disadvantages. Advantages include:

- Identifies the organization's products or services, and the total cost of providing the output.
- Forces customers to make a value judgement and consider the cost of the service when making decisions.

Disadvantages include:

- Does not produce economic efficiencies.
- Motivates managers to distort cost and demand projections in their favor.
- Decreases in costs result in decreases in price. Therefore, profit is not retained.

It is the sensitivity of price to cost and the inability to retain profit which destroys the incentive for managers to reduce costs and seek efficiency.

Gainsharing, while administrative burdensome, encourages personnel to become more effective and efficient. Additionally, providers of contracting services perceive a competitive environment, based on the Naval Supply Systems Command Productive Unit Resource system, which provides further personal incentive to reduce costs. (see Chapter IV) However, as discussed in Chapter III, organizations need resources to provide cost reduction and efficiency improvements. These resources can be provided through retained profits. Without success sharing, DBOF and Unit Cost Resourcing does not provide for these capabilities.

## **VI. CONCLUSIONS AND RECOMMENDATIONS**

### **A. CONCLUSIONS**

The central question of this thesis is: Under the Defense Business Operations Fund (DBOF) concept and unit costing for contracting services, will the managers of contracting activities be motivated and have the resources available to accept increased short term costs to improve either the long run effectiveness or quality of the contract services they provide? DBOF provides some motivation to increase efficiency and effectiveness. However, it does not provide the short term resources.

Unfortunately, only 27.3 percent of commanding officers felt very confident adequate funding would be available to carry out training and efficiency investments. Similarly, 63.6 percent felt competition exists, or will develop, for business. The competitive nature of organizations and desire for job security and gainsharing motivates employees to increase efficiency and quality. This is supported by the analysis in Chapter V, which indicates potential motivation to reduce cost, but no resources.

To meet unit cost targets, commanding officers may put off discretionary expenses for routine maintenance and productivity enhancements, such as upgrading computer hardware

and software, replacing worn out furniture and fixtures and enhancing professional training. All of these omissions will have an adverse impact on morale and productivity.

Over the long run, "slack" will be squeezed out of contracting activity budgets and unit cost targets may only cover essential short run operating costs. Discretionary expenses and long run enhancements will need to be funded through other mechanisms.

As DoD funding has declined since 1985, commands have absorbed reductions through lower output and reduced discretionary expenses that are not related to output. The perception of the Services is that most of that flexibility is gone. (Hough93)

The survey showed 63.6 percent of commanding officers will plan effective annual budgets to cover future unanticipated costs. Therefore, unit costs should fluctuate somewhat until true fixed and variable cost can be isolated and evaluated. Even then, commanding officers will need resources to adjust their costing structure to a constantly changing demand and business environment. This is the function retained profits should fulfill. OSD and the Services should keep this in mind when negotiating unit cost targets and take a lenient approach to utilizing unit cost as a measure of personal evaluation and base closures.

## **B. RECOMMENDATIONS**

The following recommendations are offered to motivate and reward successful cost reducing organizations and provide funding for their future use.

Recommendation 1: Select and implement a standardized accounting system.

Managers need to identify cost drivers and isolate fixed and variable costs. Contracting activities need cost analysis to establish the activity's position on the average total cost curve and identify the best strategy to reduce cost in the future.

Fifty-four percent of the contracting officers queried place little to no confidence in their present accounting system. The most recent GAO report on DBOF (13 May 1993) is very critical of the present accounting systems citing: "current cost accounting systems are fragmented, costly to maintain, and not effectively utilized by management." (GAO93, p. 10) Additionally, the report criticizes OSD's decision making criteria for the Defense Business Management System (DBMS). It is important to understand the cost structure of the contracting activity to properly plan and budget for next year's expenditures and monitor and evaluate the results of decisions. Other very valuable programs revolve around an accurate accounting system including accounting reports and gainsharing.

Recommendation 2: Where possible, streamline and simplify the Employee Award system to include gainsharing as a prerogative of the commanding officer, when profits are generated.

Successful commanding officers need to have the discretionary power to pass incentives down to their employees. The process of gainsharing is administratively burdensome. However, 63 percent of the activities queried thought it was an effective incentive. Gainsharing could be simplified and incorporated into the employee award system. Additionally, commanding officers gave the employee award system mixed reviews. It may need streamlining.

Recommendation 3: Initiate Success sharing.

Success sharing provides productive activities with additional funds to enhance their productivity. (Melese93) Gainsharing will provided personnel incentive and success sharing will provide the necessary resources for successful activities to increase capacity and serve more customers.

Recommendation 4: Allow activities to keep profits.

This tails onto Recommendation 3 (success sharing). Activities earned cost authority is equal to actual production times the unit cost goal. The excess between earned cost authority minus obligations is profits and vice-a-versa for losses. If an activity does not obligate its earned cost authority, these profits are returned to the Government. While DBOF intended to stop the "use it or loss it" mentality, the opposite may occur. An activity only gains a few benefits



from not spending the additional funding. They may have a lower unit cost than other providers, which looks good for evaluation purposes. Alternatively, some of the profits may be returned to the employees in the form of gainsharing.

Efficient organizations who can increase output at reduced costs or lower unit costs to generate profit are exactly the activities who should be allowed to keep and invest profits. When queried, several commanding officers noted that the ability to retain earned profits would be a tremendous asset. This allows activities to make larger investments in productivity and provides the resources necessary.

### **C. RESEARCH QUESTIONS**

#### **1. What are the essential factors of Defense Business Operations Fund?**

The essential factors of the Defense Business Operations Fund are those elements which make it more like the private sector markets, unit cost and stabilized rate. The unit cost is the average total cost to provide a service or good. The stabilized rate is the price the customer pays for the service or good provided.

#### **2. What is the process for establishing a costing structure under Unit Cost Resourcing?**

The elements of the costing structure are the unit cost and predetermined unit cost goals. As stated in question 1, the unit cost is total cost (direct costs, indirect cost, general and administrative expense, depreciation and military

personnel) divided by total output. Total output is primary outputs and any other outputs which are provided to the customer.

The unit cost calculated above is forwarded to the Office of Secretary Defense and adjusted for inflation, new elements of cost and any productivity enhancements which may have been implemented. The adjusted unit cost becomes the provider's unit cost goal.

**3. What incentives and capabilities are structured into a DBOF/Unit Cost Resourcing contracting environment?**

A manager's ability to meet or achieve their activity's cost goals may be used as an input for their personnel evaluation. Additionally, Office of Secretary of Defense has implied the unit cost of a provider may be considered in base realignment and closures. This provides a very personal, unhealthy impetus to cut costs.

While unit cost is not an accurate measure of how well an activity provides a service, it has become a basis for competition between activities and managers. This is a healthy incentive outcome.

**4. What are the benefits and disadvantages of chargeback methods and how well do they produce incentives and resources?**

Unallocated or free allocation has very limited benefits and provides few incentives for cost efficiency. This may be why the public sector is moving away from it. Cost based chargeback methods ensure full cost recovery from customers

and force customers to consider the cost and benefit of providing those services when making business decisions. They produce very little incentive other than competition to lower unit costs between activities. This is more than likely why supplemental incentive programs, e.g., gainsharing and basis for personnel evaluations, have been implemented.

**5. How could the incentive structure be improved and incorporated into DBOF and the Unit Cost Resourcing?**

Managers must be provided with the motivation/incentive to cut costs and capability/resources. Gainsharing is a powerful motivation tool. However, the lack of profits in a cost based structure removes the capability/resource aspect. Success sharing allows activities to keep a small portion of their cost savings, providing the required resources. Therefore, two of the strongest incentives would be the ability to retain unobligated profits at the end of the fiscal year for future use and the implementation of success sharing to mitigate price reductions and allow for some future profits.

**D. RECOMMENDATIONS FOR AREAS OF FURTHER RESEARCH**

1. Conduct an analysis of the demand for contracting services. The stabilized rate should offer some evidence to determine the elasticity of demand and provide a better economic picture of the need for these services.
2. Conduct an analysis of the possibilities of turning contracting over to the private sector and only performing those required acts of governance, such as policy making and decision making to the public sector.

3. Conduct an analysis of unit cost trends in contracting to see if efficiency in unit costs is achieved, increased, or not affected.
4. Develop the Average Total Cost Curve for contracting services throughout the Navy.
5. Evaluate the prospect of "gaming" DBOF and Unit Cost Resourcing by under estimating anticipated workload in follow-on years to increase unit cost targets.
6. Evaluate the prospect of customers and providers negotiating reimbursable Inter or Intra-service Support Agreements directly, vice utilizing DBOF, at rates higher than the unit cost yet lower than the stabilized rate.

## APPENDIX A

### Excerpts from Naval Supply Systems Command Fiscal Year 1992 Level of Difficulty Report

#### LARGE CONTRACT COSTS

Fleet and Industrial Supply Center	Number of Productive Unit Resources	Total Cost
Charleston, SC	7,052	\$2,771,000
Jacksonville, FL	1,870	945,000
Norfolk, VA	6,780	2,727,000
Oakland, CA	900	653,000
Pearl Harbor, HI	1,636	1,131,000
Pensacola, FL	739	416,000
Puget Sound, WA	5,540	1,817,000
Guam	307	88,000
Yokosuka, Japan	<u>5,431</u>	<u>745,000</u>
Total	30,255	\$11,293,000

#### SMALL CONTRACT COSTS

Total NAVSUP Small Purchase Actions	Total Cost
1,192,836	\$23,029,000

**Military personnel payroll costs and depreciation expenses are not available at this time and not reflected in these costs.**

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